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Course and Learning Design and Evaluation

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> **Chapter overview**
>
> This chapter explores:
>
> - concepts and paradigms of 'curriculum'
> - criteria for effective course design
> - models for curriculum and learning design
> - models and methods of curriculum evaluation

Introduction: concepts of curriculum

As Jenkins (2009: 162–3) observes:

> The formal curriculum is where the worlds of individual faculty [lecturers] and students interact and where the departmental and institutional contexts play key roles in determining what is learnt and how. However, even at the beginning of their careers faculty have the power (in part) to shape the courses they teach.

This chapter concentrates on curriculum development, from the learning design of whole programmes and their constituent units (modules) to short courses and specific sessions. It is premised on a holistic notion

of 'curriculum' as a contextualised practice that encompasses knowledge domain, educational values and principles, teaching, learning, assessment and evaluation.

In everyday parlance, 'curriculum' is often a synonym for 'syllabus' or the content of a study programme, but its etymology suggests a much richer concept. It derives from the Latin verb *currere*, meaning to run or race; the noun *curriculum* could refer to a race, a race course or a racing chariot (Goodson, 1997). Analogously, we could think of 'curriculum' as the journey of learning (race) to master required tasks, knowledge and skill (race course) aided by all available resources (racing chariot) – from the student's own aptitudes and motivations to the learning materials, interactions with peers and the steer provided by teachers as subject experts and facilitators of learning. As Sirotnik (1991: 243) puts it: 'Curriculum includes not only the content of subject matters, but how knowledge is organized, how teachers teach, how learners learn and how the whole is evaluated.' Curriculum design, for programmes, modules or individual sessions, is thus concerned with *what* is to be learnt (content); *why* (rationale and philosophy), *how* (process) and *when* (structure) it is to be learnt; and *how* the learning will be *demonstrated* (assessment) and the effectiveness of the teaching and the learning design will be appraised (evaluation) – all of which is shaped by the design principles and wider contexts (disciplinary, institutional, regulatory, political, societal) of the curriculum (see Jackson et al., 2002, for visual representations of the interconnected variables of curriculum).

Critical theorists hold the view of curriculum as a social construct and agency of social and cultural reproduction through which particular knowledges, beliefs, norms and values – usually those that serve the dominant groups and reinforce social hierarchies along class, gender and racial lines – are validated and transmitted from generation to generation (Apple, 1996; Bourdieu and Passeron, 1990; Giroux, 1981, 1983; Goodson, 1997). The curriculum is therefore not 'neutral' but the result of a selection that is produced out of the prevailing political, economic and cultural forces (Apple, 1996: 22).

Linked to this view is the idea of the 'hidden curriculum', meaning the implicit attitudes, norms and values carried in curriculum content, classroom relationships, learning environments and institutional rules and rituals, as part of the socialisation function of education (see Margolis et al., 2001, Kentli, 2009, and Cotton et al., 2013 for elaborations of this concept). For example, Geography courses purvey notions of 'sustainability' that are 'heavily mediated by lecturers' wider beliefs and attitudes' (Cotton et al., 2013: 197) and contradictions may exist between the messages of the formal curriculum and actual organisational practices (in recycling, energy

efficiency etc.), which can also be enlightening for students to investigate, using their campus as a 'case study' (Winter and Cotton, 2012). Young black women at a mainly white American college had to confront 'competing definitions about race and gender on a campus that privileged particular constructions' and the 'gaze' of white students and staff who 'often read them through a stereotypical lens' (Eposito, 2011: 155–6). Cheng and Yang (2015) found that both teachers and students, through formal medical classes and informal extracurricular activities, perpetuated 'a heterosexual masculine culture and sexism' that 'eroded' the self-esteem and learning opportunities of female and gay students (also see Hill et al., 2014, on negotiating the hidden curriculum in surgery). Yet the curriculum can also be a site of contestation or resistance, and a space for social transformation – where it is used to foster critical consciousness and democratic citizenship and to enable subordinated groups to reclaim their lives and histories (Apple, 1993; Freire, 1973; Giroux, 1983, 2011).

Curriculum paradigms

Viewing curriculum in relation to ideological and pedagogical orientations, different paradigms of or approaches to curriculum have been identified. Ross (2000) elaborates on three major curricular models evident in the history of curriculum development in Britain (see pp.128–31):

- *academic* – subject-based, content-driven curricula in which the teacher decides on and transmits approved knowledge, and assessment is prescribed and norm-referenced;
- *vocational* – skills-led, objectives-driven curricula in which the teacher guides students as to what to study, and assessment is summative and criterion-referenced;
- *developmental* – learning-centred, process-driven curricula in which the teacher partners with the students, and assessment encompasses formative and course-work elements.

In the past two decades in higher education (HE), however, there has been a shift towards integrating a developmental approach within discipline-based and professional courses, as curriculum development becomes more consciously shaped by pedagogy and the outcomes-focused impetus of HE and quality assurance policies (see Chapter 1: Teaching in the Changing Landscape of Higher Education), as well as new trends towards working with students as partners in learning and teaching development (see Chapter 6: Student Engagement).

The typology expounded by Grundy (1987) and Cornbleth (1990) classifies curriculum as:
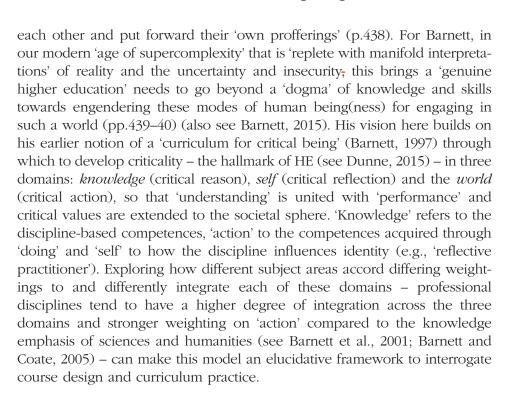
- *'product'* – curriculum is construed as a programme plan (or 'blue print' as Pratt, 1980: 4, defines it) and a product to be delivered to students, as an 'object'; the focus is on content and directing student activity toward meeting pre-set objectives;
- *'process'* – curriculum is understood as the interaction of teachers, students and knowledge, as an 'action'; the focus is on the processes that enable learning and meaning-making, allowing room for experimentation;
- '*praxis*' – curriculum becomes a vehicle for promoting human emancipation, via the exercise of 'critical pedagogy'; while sharing the focus on process, it is geared towards raising students' awareness of dehumanising, inequitable and undemocratic social practices and institutions and developing more egalitarian visions of society. It is this commitment to engendering critical reflection and action to change the world, grounded in the values of 'human well being and the search for truth, and respect for others', that constitutes 'praxis' (Smith, 2011).

Critical pedagogy is distinct from 'critical thinking' (Burbules and Berk, 1999) in that, while it also employs rational analysis to uncover assumptions and discern faulty arguments, it is a consciously 'political and moral project' that aspires to promote equality and democracy via individual and social responsibility as engaged citizens in a globalized society (Giroux, 2011). It entails 'weaving a radical content with liberating teaching practices' (Boyce 1996: 11), selecting topics, materials and analytical frameworks through which critical consciousness can be developed collaboratively through open dialogue and problem-posing; 'participative assessment' whereby students are involved in appraising their own and their peers' learning (Reynolds and Trehan, 2000); and critical reflection by teachers in reviewing and developing their effectiveness at creating emancipatory learning environments.

From an ontological angle, Barnett (2009) considers the curriculum as 'an educational vehicle to promote a student's development', as the process of 'coming to know' can be 'edifying' through its propensity to foster 'epistemic virtues', i.e. knowledge-based 'dispositions' – such as a 'will to learn', engage, listen and explore new perspectives – and 'qualities' – such as 'courage, resilience, carefulness, integrity, self-discipline, restraint, respect for others, openness, generosity, authenticity' (p.434). This depends on how actively the 'pedagogical relationship' between teachers and students works to elicit these virtues, via the curriculum content (for instance, offering 'contrasting insights and perspectives') and process – enthusing students to engage with

each other and put forward their 'own profferings' (p.438). For Barnett, in our modern 'age of supercomplexity' that is 'replete with manifold interpretations' of reality and the uncertainty and insecurity, this brings a 'genuine higher education' needs to go beyond a 'dogma' of knowledge and skills towards engendering these modes of human being(ness) for engaging in such a world (pp.439–40) (also see Barnett, 2015). His vision here builds on his earlier notion of a 'curriculum for critical being' (Barnett, 1997) through which to develop criticality – the hallmark of HE (see Dunne, 2015) – in three domains: *knowledge* (critical reason), *self* (critical reflection) and the *world* (critical action), so that 'understanding' is united with 'performance' and critical values are extended to the societal sphere. 'Knowledge' refers to the discipline-based competences, 'action' to the competences acquired through 'doing' and 'self' to how the discipline influences identity (e.g., 'reflective practitioner'). Exploring how different subject areas accord differing weightings to and differently integrate each of these domains – professional disciplines tend to have a higher degree of integration across the three domains and stronger weighting on 'action' compared to the knowledge emphasis of sciences and humanities (see Barnett et al., 2001; Barnett and Coate, 2005) – can make this model an elucidative framework to interrogate course design and curriculum practice.

Criteria for effective course design

Various frameworks offer criteria as to what makes for a well-designed course. Common to them all is the principle that course design should be centred on enabling successful, high-level learning. In his influential model, John Biggs (1996, 1999) propounds 'constructive alignment' whereby teaching methods and assessment tasks should engage students in activities through which they can achieve and demonstrate required learning outcomes. His approach rests on constructivist learning theory which posits that 'learners arrive at meaning by actively selecting, and cumulatively constructing, their own knowledge, through both individual and social activity' (Biggs, 1996: 348). (For a critical discussion of challenges and paradoxes in applying constructivism to contemporary higher education, see Schweitzer and Stephen, 2008.) This activity may occur through a range of teacher-led, peer-based and self-study activities – lectures, seminars, practical sessions, groupwork, learning contracts, informal student collaborations (see Chapter 3: Teaching by Leading and Managing Learning Environments) – and assessment methods aimed at encouraging 'deep learning' (Biggs, 1999).

A 'deep' approach is characterised by the academic ideal of critical, integrative, intrinsically motivated learning, as opposed to a 'surface' approach of uncritical, atomistic rote-memorisation, or a 'strategic' grades-orientated, assessment-driven approach which veers between deep or surface learning as required (Marton et al., 1997; Biggs, 2003; Ramsden, 2003). Students' approaches to learning are not fixed dispositions but situational interactions between their motives, learning styles and abilities and the dynamics of the teaching-learning environment (see Entwistle, 2003).

Criteria for design for deep learning are synthesised in Table 2.1, which combines advice from Ramsden (2003) and Biggs (2003) with the 'seven principles for good practice' derived by Chickering and Gamson (1987) and the eight principles for creating 'a supportive critical community of inquiry' proposed by Garrison and Anderson (2003: 18).

Curriculum coherence, as Hounsell and McCune (2002: 20) suggest, also entails alignment to the students, with responsiveness to 'diverse student needs and capabilities', and alignment of learning support and course organisation and management (e.g. teaching spaces, equipment, facilities, course handbooks, feedback from students) to help implement curricular aims. Similar principles are foregrounded by Bovill et al. (2011) in relation to 'course design to engage and empower students', noting the importance of providing for cumulative development throughout the curriculum of students' academic and literacy skills (see Chapter 8: Engaging with Academic Writing and Discourse), and using ongoing feedback to enable learners to be aware of their progress in relation to required standards (see Chapter 4: Assessment for Learning).

A student-focused approach to course design and delivery therefore needs to be inclusive (see Chapter 7: Embracing Student Diversity), creating learning opportunities that 'engage all students meaningfully by encouraging them to draw on and apply their own and others' knowledge' and taking care 'to anticipate, recognise and provide for individuals' specific physical, cultural, academic and pastoral needs' (Hockings, 2010: 47). In their guidelines for 'inclusive curriculum design', Morgan and Houghton (2011) recommend an approach that 'places the student at the heart of the design process' (p. 11) and embeds the following principles (pp. 12–13):

- *anticipatory* – proactively considers the entitlements of all students in all activity across the whole student life cycle;
- *flexible* – is adaptable to the changing student profile and circumstances;
- *accountable* – encourages staff and student responsibility in meeting equality objectives;

Table 2.1 Criteria for effective course design

Criteria for effective design	Biggs (2003)* and Ramsden (2003)#	Chickering and Gamson (1987)	Garrison and Anderson (2003)
Sets clear, high expectations	Clearly stated expectations#	(6) communicates high expectations	(1) negotiable expectations, clearly expressed, encourage deep approaches to learning
Embraces student diversity		(7) respects diverse talents and ways of learning	
Encourages student–teacher contact	Teaching and assessing in a way that encourages a positive working environment so students can make mistakes and learn from them*	(1) encourages contact between students and teachers	
Enables well-structured knowledge	Teaching that brings out the structure of the topic or subject explicitly*		(2) coherent knowledge structures (schema) facilitate purposeful and integrative learning
Clarifies relevance and meaning of content and tasks	Stimulating teaching which demonstrates lecturer's commitment to the subject and its meaning and relevance to students#		
Promotes critical thinking	Teaching to *elicit* a positive response from students, by questioning and presenting problems, rather than to *expound* information*		(5) critical discourse confirms understanding and diagnoses misconceptions (6) critical thinking must be modelled and rewarded
Encourages student responsibility			(3) control creates commitment and encourages personal responsibility to monitor and manage meaningful approaches to learning – also see (1) above

(Continued)

Table 2.1 (Continued)

Criteria for effective design	Biggs (2003)* and Ramsden (2003)#	Chickering and Gamson (1987)	Garrison and Anderson (2003)
Offers student choice in content and process	Opportunities to exercise responsible choice in method and content of study#		(4) choice in content and process is a catalyst for spontaneous and creative learning experiences and outcomes while recognising and valuing intuition and insight
Fosters active learning	Teaching and assessment methods foster active engagement#	(3) encourages active learning	
Develops collaborative learning		(2) develops reciprocity and cooperation among students	
Ensures time on task	Sufficient time to engage with tasks (*versus* emphasising coverage at expense of depth)*	(5) emphasizes time on task	
Assessment is aligned to learning objectives	Principle of constructive alignment*		(7)assessment must be congruent with expected learning outcomes (8) learning is confirmed through assessment
Provides prompt and instructive feedback	Feedback on progress encourages deep learning#	(4) gives prompt feedback	

- *collaborative* – involves partnerships among stakeholders (students, staff, professional bodies, employers etc.) to develop course content and relevance;
- *transparent* – clarifies the rationale for design decisions, promoting awareness of the benefits for all;
- *equitable* – ensures procedures are the same for all students and decisions are fair and transparent.

To that end, they offer a set of generic questions on various aspects of course design (see pp.15–16) to ensure that 'all students' entitlement to access and participate in a course are anticipated, acknowledged and taken into account' (p.14), illustrated with practical examples from two dozen different disciplines (see section three of this publication). The University Design for Learning (UDL) framework also defines cogent principles (derived from learning sciences research) for creating inclusive curricula. It recommends that all courses should offer students:

- *multiple means of representation* to acquire knowledge (course content presented in variety of formats – text, audio, image, video, hyperlinks);
- *multiple means of expression* to demonstrate what they know (varied tools and forms of assessment, supported by exemplars and formative feedback);
- *multiple means of engagement* to motive them to learn (choice of content and modes of learning) (Hall and Stahl, 2006).

Dell et al. (2015) illustrate how UDL principles can be applied to online courses following practical steps in the guide developed by the University of Arkansas (http://ualr.edu/pace/tenstepsud/ – accessed 31.07.15), and Tobin (2014) proposes a set of creative strategies based on UDL found helpful for increasing 'online student retention'.

Models for curriculum and learning design

Curriculum development entails how 'a curriculum is planned, implemented and evaluated, as well as what people, processes and procedures are involved' (Ornstein and Hunkins, 2009: 15). Curriculum models can assist designers to undertake course development in a more systematic and considered way. Although curriculum models can be useful as heuristic devices, they are not a 'recipe' and should be informed by teachers' professional judgements as to what are apt approaches to fostering student learning (Knight, 2001; Ornstein and Hunkins, 2009). As Toohey (1999: 25)

says, the central question for course design is '*What is most important for these students to know and what might be the best ways for them to learn it?*' (italics in original). To this, Light et al. (2009: 80) add further questions that highlight the centrality of 'assessment' and 'evaluation' to course design:

- How will you know if your students have achieved desired learning?
- How will you know if and how your teaching has contributed to such learning?

Related to the differing conceptions of 'curriculum' (discussed above), curriculum models can be broadly classified as

- 'product' or rational models, which propose a step-by-step, outcomes-led approach aimed to yield coherent curriculum plans and efficient delivery of education, and
- 'process' models, which focus more on the students' experience and activities for engaging them in meaningful learning (see overview by O'Neill, 2010).

There are many different curriculum models; it is a question of choosing which model(s) are best suited to one's academic discipline.

Rational models

'Product' or rational models employ means-to-end reasoning in which curriculum content and methods are planned in light of pre-determined learning objectives. Typically, these models – such as systematic 'instructional design' (see Kemp, 1977; Dick and Carey, 2014 (originally 1978); Romiszowski, 1981) – follow a linear sequence in which:

- the demand for the course is established;
- learner characteristics and needs are considered;
- intended learning outcomes are specified;
- subject content is selected and sequenced;
- teaching and assessment methods are chosen;
- teaching plans and learning materials are devised;
- the course is delivered and evaluated and adjustments are proposed.

The assessment-focused model proposed by Moon (2002, 2007) seeks to ensure a close relationship between level, learning outcomes, assessment and teaching, according to the following sequence:

- use module aims and level descriptors (generic statements of what learners should achieve by the end of a particular level of HE study), translated in subject discipline terms, to write learning outcomes;
- write threshold assessment criteria implied by the learning outcomes;
- develop assessment method(s) to test achievement of these criteria;
- develop a teaching strategy to enable students to attain the threshold criteria;
- implement the module and check the coherence of the cycle, rethinking initial learning outcomes and so on if necessary.

Instead of this 'chronological' kind of model, Cowan et al. (2004: 448) favour a 'logical' but more fluid model, involving 'simultaneous consideration' of assessment, learning and teaching activities in relation to desired learning outcomes, to achieve curriculum alignment (pp.449–50). They propose use of an 'alignment matrix' (p.447) to map activities (shown in vertical columns) to outcomes (listed horizontally), with an additional column for 'evaluation' of how effectively all elements work together.

In reality, curriculum construction is a complex, iterative process in which there is a constant interplay among all the factors that impinge on the curriculum. This is vividly captured in the 'ouija board' model propounded by Jenkins (2002, 2009). He uses the metaphor of an 'ouija board' (a device that uses alphabet letters and a movable pointer for communicating with the spirit world) to convey the idea that the curriculum is influenced by a range of 'forces' which both impact on practice and are shaped by lecturers as they exercise creative choices in curriculum-making. These 'forces' include:

- aims and objectives;
- conceptions of the discipline;
- research interests;
- educational theories, research and pedagogy;
- student needs;
- learning methods and technologies;
- assessment-as-learning;
- credit structures;
- quality and external requirements;
- student time (in and out of class);
- costs and resources.

Curriculum making naturally reflects its context. Luckett (2009) found that the knowledge structure of the discipline combined with the departmental culture had an overriding influence on the curriculum structure. Trowler (2009) and Fanghanel (2009) elucidate how 'teaching and learning regimes'

operate at the 'meso-level' to impact on lecturers' academic practice. All these above aspects, however, should be considered for achieving thorough, rigorous curriculum development.

While 'rational curriculum planning' fits well with the quality assurance regimes and managerialist culture prevalent in HE, for Knight (2001: 373–4) it has certain limitations: complex learning is not easily reduced to precise statements of what students will learn, and the approach is 'too efficient' – it needs to allow space for 'creativity, innovation and flexibility' in teaching and learning. Similar cautions about narrow outcomes-based approaches are voiced by Hussey and Smith (2003). Noting that teachers in HE are ironically stuck between 'tight adherence to achieving pre-specified outcomes' and optimising 'the development and support of independent, autonomous and lifelong learners' (p.358), they urge that learning outcomes should be framed 'more broadly and flexibly' (p.367) so as to embrace students' emergent learning and enjoyment too. Tam (2014) argues that while the outcomes-based approach sharpens the focus onto student learning, care should be taken to avoid 'rigidity and conceptual reification' when implementing this approach in curriculum design and teaching. Light et al. (2009: 84–5) contrast two uses of learning objectives:

- the *rational* approach, where courses are designed to produce uniform outcomes to satisfy the goal of standardisation; and
- the *reflective* approach, where courses are designed to offer a 'rich environment of learning experiences to which students will respond in different ways' (p.85), and teachers reflect on objectives to guide ongoing changes to the course and professional judgements-in-action.

Process model

It is the latter type of approach that characterises the 'process model' advanced by Knight (2001, 2002), influenced by complexity theory. Here, curriculum planning

- arises from imagining good learning activities for engaging students with the subject, and then orchestrating these through
- mapping the learning processes across the set of modules that make up the programme, and
- constructing a 'general specification' of the knowledge/skill areas in which students should be able to make claims to achievement. This 'directs attention' but does not tightly prescribe (in the way outcomes-based planning does) what should emerge from the learning process.

Other important and widely relevant features of this model include:

- meeting criteria for good teaching, such as interest, clarity, enthusiasm, use of varied methods and media and collaborative and reflective learning activities (see Knight 2001: 375);
- ensuring that the assessment system builds the students' capacity to evidence their learning, providing them with responsive feedback (see Chapter 4: Assessment for Learning);
- obtaining timely feedback on the impact of teaching on student learning, making adjustments where necessary.

Given the predominance of outcomes approaches, Knight (2001: 379) suggests that a process-based curriculum designed so as to generate the 'right ingredients' can then be checked against quality assurance standards (such as level descriptors or subject benchmarks) to see whether any required outcomes are 'unlikely to emerge' and fine-tuned as necessary.

Programme design

For curriculum design of an entire degree programme, the framework devised by Hartman and Warren (1994) combines a 'rational' and 'process' approach whereby the end goal is considered in tandem with a strong focus on the students' characteristics and the learning processes and support that would enable them to develop desired graduate attributes. It entails moving iteratively among the following areas:

- *type(s) of graduate* – nature and value of the discipline; recommendations of professional bodies; society needs; institutional ethos; national education policy;
- *types of students* – background knowledge and prior experience; conceptual understanding; (existing) skills and language competence; approaches/attitudes to studying;
- *curriculum aims* (bearing in mind the ideal graduate) – body of knowledge and level of conceptual and theoretical development; general academic, discipline-specific and personal/interpersonal skills;
- *curricular structures* – semesterised or whole-year courses (modules); co-requisites; double majors (joint degrees); additional educational interventions (such as writing-intensive modules);
- *course (module) design* (with reference to curriculum aims and structure, and the student profile) – content; sequencing of conceptual and skills development; selection of texts; pace and workload; learning and teaching

activities and materials; assessment methods and criteria; feedback to students; monitoring student progress; provision of academic support;

- *resources* – teaching staff; time; funding; consultative (such as input from library, educational development or elearning specialists, industry, employers and practitioners); provision for staff professional development (see Chapter 11: Professional Development).

A useful tool for designing in coherent, progressive learning opportunities across a whole programme is a 'skills matrix' in which the various graduate skills are displayed in vertical columns, then the modules are listed horizontally per year or level of study, and in relation to each module it is identified which particular skills are introduced (I), practiced (P) and/or assessed (A) (see Turner, 2002: 27, for an example). A more sophisticated set of indicators developed by Sumsion and Goodfellow (2004: 333) identifies whether specific skills/attributes are 'assumed, encouraged, modelled, explicitly taught, required [or] evaluated'. This kind of method thus provides a map of how the various modules individually and collectively contribute to the cumulative development of graduate outcomes.

'Teaching for understanding' and 'threshold concepts'

When it comes to thinking about what makes for good learning 'encounters' in the subject area (Knight, 2001: 376), a useful model is the Teaching for Understanding (TfU) framework developed by scholars at the Harvard Graduate School of Education (see Perkins, 1993; Wiske, 1998; Wiske et al., 2005). It proposes that courses should create opportunities for students to gain awareness of and demonstrate the four dimensions of understanding (see summary in McCarthy, 2008: 104):

- *purposes* – what drives inquiry in the discipline (or field)?
- *knowledge* – what are key concepts in the discipline?
- *methods* – how is knowledge created and verified in the discipline?
- *forms* – how is knowledge expressed in the discipline?

McCarthy (2008) reveals that where university lecturers adopted this TfU approach it helped to facilitate active learning and 'learning how to learn' among their students.

   Allied to TfU is the notion of 'threshold concepts', defined as 'concepts that bind a subject together, being fundamental to ways of thinking and practising in that discipline' (Land et al., 2005: 54). These are construed to be '*transformative* (occasioning a significant shift in the perception of a subject),

irreversible (unlikely to be forgotten, or unlearned only through considerable effort), and *integrative* (exposing the previously hidden interrelatedness of something)' (p.53) as well as '*troublesome*' where perceived as counter-intuitive or conceptually awkward or absurd (Meyer et al., 2015: 277). During the process of mastering a threshold concept, learners enter into a liminal space as they oscillate between old and emerging understandings, which can cause confusion and uncertainty. Teachers need to offer motivating tasks, empathetic listening and facilitation as students negotiate the new conceptual terrain back and forth (Cousin, 2006; Land et al., 2014). Considerable research has been conducted in a range of disciplines towards identifying threshold concepts in particular fields (as the 'jewels in the curriculum'), to help lecturers prioritise content and ponder ways of teaching them (see Quinlan et al., 2013: 586, for surveys of such work, and Tight, 2014, for a review of theorisation here). Regarding curriculum development, it is recommended that courses should be designed and reviewed according to the sequence of content and processes through which students encounter, explore and internalise threshold concepts – via activities such as scaffolding, use of learning materials and conceptual tools, mentoring and peer collaboration – and demonstrate their understanding through appropriate assessment (Land et al., 2005, 2006). A resonant case study of how threshold concepts have informed curriculum making is the account by Rowe and Martin (2014) of 'Dance 724', a postgraduate module in qualitative research methods and academic writing that prepares students with diverse cultural and educational histories for independent research projects; while their focus is on dance studies, the issues discussed may be common amongst performing artists and practitioners from varied fields transitioning into academic study. Their course sought to address six 'key thresholds' formed by problematic assumptions associated with academic writing and with the nature of research, using pedagogic practices such as 'polylogues' (group discussions which prompt diverse interpretations to emerge), writing tasks repeatedly approached from different angles (akin to choreographic processes of reflection and refinement) and peer review.

Curriculum design and the research–teaching nexus

Related to the TfU approach is the question of curriculum design that fosters connections between research and teaching. The model in Jenkins et al. (2007: 28–9), and updated in Healey et al. (2014: 16–17), distinguishes between four approaches defined in relation to two axes – (i) emphasis on research content *versus* research process, and (ii) students as audience *versus* participants:

- *research-led* – curriculum is structured around learning content that reflects current research in discipline, which may include staff research;
- *research-tutored* – curriculum is focused around students learning about research findings in small-group critical discussions with lecturers and writing essays;
- *research-orientated* – curriculum promotes a research ethos through teaching that highlights processes of knowledge construction in the discipline and develops students' knowledge of and ability to employ research methodologies and techniques;
- *research-based* – curriculum is organised largely around enquiry-based learning activities (see below), with learning treated as a research-like process.

Case studies of course designs and strategies for course teams to engage students in research and inquiry can be found in Jenkins et al. (2007), Healey and Jenkins (2009) and Healey et al. (2014).

For interdisciplinary and multidisciplinary course design, a theme-based approach can provide for a coherent architecture and conceptual integration, for example building an 'integrated' curriculum around an over-arching 'real world issue' such as 'migration'. Park and Son (2010: 84) clarify that:

> Multidisciplinary learning highlights learning of various topics from diverse disciplines; while interdisciplinary learning has a mixture of diverse disciplines to solve a problem. Transdisciplinary learning, taking interdisciplinary learning a step further, facilitates collaborative learning through a shared conceptual framework.

Constructing a cross-disciplinary course requires careful, collaborative planning, as Bucci and Tranthan (2014) illustrate with reference to their module on 'Children and Violence' combining criminal justice and psychology disciplines. The process entailed *generative*, *refining* and *finalising* stages as the lecturers moved from brainstorming ideas about purposes, goals, content, activities, assignments and readings, to narrowing these down to a 'manageable form', then producing the course documentation and materials (pp.124–6). Benefits of interdisciplinary teaching, they suggest, include expanding the knowledge horizons and insights of both the teachers and learners through courses that deal with current subjects, which keeps the students' interest, and clarifying core (threshold) concepts in light of the interacting disciplines.

Learning-centred designs

Courses can also be constructed around learning-centred designs, using enquiry-based learning (EBL). This umbrella term describes approaches

where learning is driven by processes of enquiry designed to stimulate students' curiosity and promote active and collaborative engagement in finding and applying knowledge for the solution of complex problems and scenarios (Kahn and O'Rourke, 2005). EBL can serve well for enabling experiential learning in terms of Kolb's (1984) learning cycle, creating opportunities for reflection on and abstract conceptualisation from concrete experiences, leading to active experimentation with new ideas. Although adapting to EBL can pose challenges (e.g., fit with students' learning styles; attending to group functioning; securing staff commitment and shifting to the role of 'process facilitator'; assessing the learning process as well as outcomes), perceived benefits include increased student interest, collaborative and independent learning and transferable skills (Deignan, 2009), and EBL can be applied across a spectrum of disciplines – see case studies in Barrett et al. (2005) and the University of Birmingham (n.d.) web page. Forms of EBL include problem-based, case-based and project-based learning (also see Chapter 10: Work-related and Professional Learning).

Problem-based learning

An approach that has expanded to numerous subject areas since its introduction in medical education in the 1960s (see overview in Hung et al., 2008), here the problem initiates and anchors the learning: 'Instead of requiring that students study content knowledge and then practi[s]e context-free problems, PBL embeds students' learning processes in real-life problems' (p.486). Problems can be presented 'in a variety of formats including: scenarios, puzzles, diagrams, dialogues, quotations, cartoons, e-mails, posters, poems, physical objects, and video-clips' (Barrett, 2005: 56). Working in small groups students unpack the problem, identify then gather and synthesise information required to address it, and propose and critically review solutions. While the PBL group tutorial is at the heart of the process, it can be supplemented by lectures, practicals and skills workshops which serve as resources for tackling the problem (Barrett, 2005). In terms of course design, the curriculum content and process is organised around carefully selected and designed problems of appropriate complexity (see Hung et al., 2008: 496–8) – decision-making, diagnosis-solution, and policy-analysis problems are deemed best suited for PBL (Jonassen and Hung, 2008) – and compatible forms of assessment for appraising the self-reflection and practice-based knowledge, skills and attitudes developed holistically through PBL (see MacDonald, 2005). Checklists can offer a precise tool for assessment of PBL sessions (see Elizondo-Montemayor, 2004). As Savin-Badin (2014) discerns, there are a

number of variants ('constellations') of PBL, depending on the disciplinary and pedagogical orientation of courses. For a practical guide to PBL see Jonassen (2010) and Brodie (2013) and case studies in Barrett and Moore (2011), the *Interdisciplinary Journal of Problem-Based Learning* and new *Journal of Problem Based Learning in Higher Education*.

Case-based learning

Here a realistic case relevant to the course (medicine, law, business, social work etc.) provides the springboard for learning, with students analysing it and making decisions as to the best course of action. Using cases can resonate with students because they provide authentic examples of theory in context, while also requiring learners to exercise high-order thinking skills and presenting opportunities for working in teams (Branch et al., 2014 – includes a range of case studies). Benedict (2010) reports that integrating case-based learning, using virtual patient technology, with PBL practica in an advanced therapeutics course in Pharmacy boosted learning outcomes and was intellectually stimulating and enjoyed by most students. As Altay (2014) evinces in relation to design disciplines (architectural, interior and industrial product design), case-based learning can be successfully combined with role play and project-based learning to achieve 'learner-centred instruction' that strengthened students' analytical, evaluative and creative skills as well as increasing empathy with diverse users for whom they were designing.

Project-based learning

EBL occurs here through projects that present authentic, real-world challenges, are academically rigorous, and require students to generate, evaluate and implement project ideas and create high-quality products and presentations (see Lee et al., 2014). Success is aided by teaching that supports effective goal-setting, develops project-management skills, and provides project consultation and monitoring, and feedback to students (Garrison, 1999). Project-based learning can be integrated within more traditional courses, using projects for applying knowledge and run alongside lectures (see Engineering case study in Gavin, 2011, which addresses the key elements of curriculum design). Indeed, this 'hybrid' approach may well work better with students engaging with this method for the first time, as they may lack the problem-solving and interpersonal skills to participate in fully-fledged project-based learning (Chua, 2014). Features of course design that can enhance such learning include use of: community partnerships to help

students to build networks in the field and provide authentic feedback, which motivates students and overcomes resistance to this method, as their work is open to public scrutiny; learning contracts to improve group dynamics; project calendars to build in progress checks and instil accountability to groups; and rubrics (criteria) to guide assessment, especially where it involves creative products (such as films or brochures) less familiar to the students or staff, reinforced by feedback or evaluation from peers and from clients (Lee at al., 2014). (also see Chapter 10: Work-related and Professional Learning).

EBL courses can also offer scope for a 'negotiated curriculum' in which students have a say in what and how they wish to learn and are assessed, often using a 'learning contract' to specify this. In the case reported by McMahon (2010) students in a module on 'training and development' set their own programme organised around action-planning, weekly self- and peer-assessment, and production of a portfolio to evidence learning outcomes; it had a 'transformative' impact on their self-confidence and abilities as students and as trainers in their places of work. In addition, through 'arts-based inquiry', creative methods using art forms (poetry, narrative, images, painting, dance, drama, music etc.) can stimulate engaged, whole-person learning that deepens students' reflection, conceptual understanding, creativity, confidence, empathy and self-awareness (Warren, 2013).

'Community of inquiry' model

The 'community of inquiry' (CoI) model (Garrison and Anderson, 2003; Garrison, 2007) has become influential particularly in relation to online learning where the challenge is to create equivalent dynamics to face-to-face environments (see Chapter 5: Blended Learning). The model construes participants as engaged in deep learning through the confluence of social, cognitive and teaching presence:

- *social presence* is the ability of learners to project their personalities and interact with peers to achieve effective and open communication for sharing ideas and building group cohesion;
- *cognitive presence* is their interaction with content, involving the exploration, construction, resolution and confirmation of understanding through collaboration and reflection;
- *teaching presence* establishes and sustains the CoI, enabling these interactions and worthwhile learning outcomes through the teacher's fundamental role in design, facilitation and direct instruction (Garrison et al., 2010).

Although some researchers question the relative influence of group-based social presence on learners' knowledge construction (Annand, 2011), in the main the CoI framework has proved fruitful both for theoretical exploration of the learning transactions and for guiding learning design in practice (see Swan and Ice, 2010, and special issue of *Internet and Higher Education*, volume 13; and Akyol and Garrison, 2013, which includes case studies on topics such as effective teaching practices, online discussions, student assessment and medical education). The model has, for example, informed studies of video-based instruction in HE courses (Borup et al., 2012), students' use of social media (*Facebook*) as a collective 'third space' for academic networking and 'safe' expression of 'counter scripts' (Rambe, 2012) and students' adoption of democratic principles of responsibility, critique, participation and collaboration in the virtual classroom (Gallego-Arrufat and Gutiérrez-Santiuste, 2015).

7Cs model of learning design

The '7Cs' model (Conole, 2013: 77–8) is a framework for designing a 'learning intervention' that 'makes effective use of technologies':

- *conceptualise* – what is the vision of the learning intervention? who is it being designed for? what pedagogical approaches are used?
- *capture* – what Open Educational Resources are being used, and what other resources need to be developed?
- *create* – what kinds of learning activities will the learners engage with?
- *communicate* – what types of communication will the learners be using?
- *collaborate* – what types of collaboration will the learners be doing?
- *consider* – what forms of reflection and demonstration of learning (assessment) are included?
- *consolidate* – how effective is the design? do the different elements work together?

(For online guidance on the use of this model, see websites listed at the end of this chapter.)

Session design

McAlpine's (2004) model for a 'unit of instruction' covers four main phases linked to Gagne's (1985) 'conditions of learning':

- *engagement* – gain attention of students, clarify learning objectives, stimulate recall of prior learning;
- *informing* – advise students about the subject matter or task, present stimulus material;

- *practice* – provide activities for students to rehearse, perform, apply; provide guidance and feedback on performance, enhance knowledge retention and transfer;
- *assessment* – assess student performance and outcomes.

It is intended both as a 'design tool' and a 'chronology' for the teaching–learning process (the first two phases are short and introductory, with the bulk of time focused on 'practice'), which acts as preparation for formal assessment. However, the 'assessment' could also be an informal, interim evaluation of how far students are developing desired understanding and competencies and whether further teaching is needed (see ideas about 'classroom assessment techniques' below).

Curriculum evaluation

Evaluation has been broadly defined as 'the purposeful gathering, analysis and discussion of evidence from relevant sources about the quality, worth and impact of provision, development or policy' (CSET, 2008). In curriculum terms, it is distinguished from *assessment*, which pertains to processes used ascertain whether students have achieved learning outcomes; however, *evaluation* can use assessment data as part of the evidence. In Norris's (1998: 207) nutshell definition: 'curriculum evaluation is about describing the meaning, values and impact of a curriculum to inform curriculum decision making'. In this sense, curriculum evaluation is also process through which to develop 'Scholarship of Teaching and Learning' (see Chapter 11: Professional Development).

Purposes and approaches

Evaluation is integral to all phases of curriculum development, and it can serve a number of purposes:

- *developmental* – to gauge how well the course or session is meeting students' needs and facilitating desired learning, and to identify where it can be improved;
- *appraisal* – to judge teacher competence for probation, accreditation or promotion;
- *accountability* – to furnish evidence of quality and standards;
- *innovation* – to review the effectiveness of a new approach or method

(adapted from Light et al., 2009: 241).

There are also different approaches to curriculum evaluation, including:

- *empiricist* – high on reliability and validity;
- *illuminative evaluation* (Parlett and Hamilton, 1972) – providing a close-up, qualitative study of the teaching and learning in context that seeks to discover and document what it is like to be a participant in an innovative programme (as an example from HE, see the evaluation by Clemow, 2007, of the learning process in an interprofessional mentorship course for health professionals);
- *bureaucratic* – driven by institutional procedures using set instruments;
- *collective or participative* – often involving students as investigators as well as subjects. Increasingly students are being incorporated as authentic partners in curriculum development in HE, a process which is challenging but rewarding for all parties and can provide a 'rich experience of learning from students through opening up meaningful dialogue' (Bovill, 2014: 22) (also see Chapter 6: Student Engagement).

A distinction is also made between *extrinsic* evaluation, which is concerned with judging the extent to which espoused objectives are achieved – and accepts that these 'can be stated in relatively unequivocal and measurable terms', and *intrinsic* evaluation, which asks questions about the worth of the stated objectives themselves and whether the experiences provided meet the needs of all interested parties (Gilbert, 2004: 303–304).

Evaluation can be *formative*, conducted during the course to enable immediate adjustments responsive to student learning needs and feedback, as well as *summative*, an overall review undertaken at the end. Diamond (2004) highlights how use of structured, mid-term feedback, collected via small-group discussions led by a trained facilitator (the lecturers were not present), prompted informed changes such as clarification of expectations or content, new teaching strategies or refinements to assessment. 'Classroom assessment techniques' – quick, non-graded in-class activities designed to give both lecturers and students useful feedback on the teaching-learning process (see Angelo and Cross, 1993) – offer a repertoire of exercises for instant, continuous evaluation of course-related knowledge and skills, students' attitudes and values, and their reactions to teaching. Examples are the one-minute paper completed near the end of class ('What was the most important thing you learned'? or 'What important question remains unanswered?'), pros-and-cons grids, skills checklists and reading rating sheets (see Chapter 4: Assessment for Learning).

Planning and conducting an evaluation

Questions to ask when planning an evaluation include:

- What is the purpose and focus of the evaluation?
- What values and criteria underpin the evaluation?
- From whom and in what form will data be collected?
- Who will collect and analyse data?
- What type of analysis, interpretation, and decision rules will be used and by whom?
- Who will see the results of the evaluation?
- Who will use the results of the evaluation?
- How will the results and actions arising be fed back to the students?

Topics commonly covered in curriculum evaluation include attainment of learning outcomes, subject matter, teaching and learning methods, assessment and feedback practices, learning spaces and facilities, academic support and learning resources. Criteria will relate to the goals of the evaluation: for instance, how far the course promotes 'constructive alignment', 'deep learning' or mastery of 'ways of thinking and practising in the discipline' (see Hounsell and McCune, 2002). These goals could also be determined in light of the 'level' of evaluation being pursued, as per the model formulated by Kirkpatrick (2006) in relation to organisational training:

1 *Reaction* – how students feel about the course/learning experience.
2 *Learning* – their acquisition of new knowledge, skills and attitudes.
3 *Behaviour* – changes in their behaviour in learning or practising.
4 *Results* – usually this refers to benefits to the organisation (such as increased staff morale, productivity or client satisfaction); however, in adapting this model for evaluation of outcomes in HE, Praslova (2010: 222) suggests that this level could include 'alumni employment and workplace success, graduate school admission, service to underprivileged groups or work to promote peace and justice, literary or artistic work, personal and family stability, and responsible citizenship'.

Student evaluations of teaching (SET) have tended to focus mainly on 'level 1', although in their 'comprehensive overview of all meta-analyses' related to SETs, Wright and Jenkins-Guarnieri (2012) concluded that SETs are valid measures of teaching effectiveness and useful tools for improving quality of teaching and, hence, student achievement. Yet research findings also indicate low correlations between SET scores and student learning, so that Tran (2015) urges adoption of a 'learning-focused' approach to evaluation which explores

what students can do as a result of the teaching, recognising that educational responsibility lies on both sides. Examples of this approach are the National Survey of Student Engagement (NSSE) in America, or its Australasian version (ACER) (http://research.acer.edu.au/ausse/ accessed 31.07.15), in which 'students' approaches to learning and student learning outcomes were measured as indicators of effective teaching' (Tran, 2015: 56). Also, Frick et al. (2010) have developed a similar instrument for evaluating Teaching and Learning Quality (TALQ) that combines items based on 'first principles of instruction' (Merrill, 2002) with questions about students' own academic learning time and progress on the course.

Ideally, as Harris et al. (2010) explain, curriculum (programme) evaluation should be 'longitudinal, developmental and multilevel', exploring the differences between the '*intended, implemented* and *attained* curriculum' to ensure quality learning and teaching experiences adapted to changes in the educational context are provided; and their health sciences case study shows that 'a carefully planned evaluation can contribute to evidence-based, responsive decision-making throughout the lifespan of the curriculum' (p.488). Likewise, the approach employed Spiel et al. (2006) in evaluating a medical curriculum by revealed a 'discrepancy between educational objectives and their realization' that indicated directions for improvement: first the evaluators 'defined central areas of expertise graduates should possess' and then they asked 'defined learner and teacher groups to evaluate these areas, either as self-assessment or as external/expert assessment' (p.446). A similar systematic approach developed by Hall (2014) for nursing education is the 'BEKA' methodology, applicable to other professional disciplines too: '*Benchmarking* compares curriculum against external standards; *evidencing* drills further into the data in relation to objectives and content mapping, resource mapping [texts, readings etc.], and assessment analysis. *Knowing* involves interviews with stake holders [teachers and learners] to uncover deeper understanding. Lastly *applying* establishes what students actually know and are able to apply' (p.345, italics added). From a 'meta-analysis' of all data, actions plans are devised to resolve discrepancies.

Evaluation methods

Evaluation data can be obtained from different sources using a variety of possible methods:

- *course materials*: outlines, handbooks, tasks, readings, online resources;
- *self-generated*: 'previewing' and 'retracing' specific teaching sessions to pinpoint areas of difficulty and success, usually in consultation with a 'critical friend' (Hounsell, 2003: 205), teaching logs/diaries;

- *students*: instant and informal feedback, suggestions boxes, course committees, questionnaires, focus groups, interviews, shadowing, analyses of assessed work and learning journals for evidence of learning outcomes;
- *peers*: feedback from teaching team, library staff and pedagogical specialists, classroom observations, peer review of other aspects of teaching (such as assessment or VLE design);
- *external*: examiners, employers, professional bodies, supervisors of work/study placements.

Good practice requires using more than one source and type of information, to permit 'triangulation' of data. For detailed points on the use, advantages and constraints of different methods see the *Evaluation Cookbook* (Harvey, 1998) and guide on *Collecting and Using Student Feedback* (Brennan and Williams, 2004). It is also important to 'close the loop' with students, so that they can see that their feedback is valued and acted on. Numerous options here include: feedback in lectures (verbal, summary handout), during induction, minutes or reports, newsletters, noticeboards, email, webpage, student-staff committees and meetings with student representatives.

Online evaluations have become ubiquitous, but often suffer from low response rates, a serious matter given data-driven decision-making in HE nowadays. Survey fatigue and 'nonresponse double-bias' – students with high grades tend most to respond and also to give high ratings – are key issues that could be addressed by better coordination and communication (Adams and Umbach, 2012), explaining the value of the course evaluation process and sending reminders to students, besides ensuring a stable and accessible platform (Norris and Conn, 2005). Furthermore, Park (2014) notes that despite becoming electronic, data collection instruments and response levels remain unchanged. However, 'active participation, high engagement and constructive feedback can be achieved … where the design of the evaluation questionnaire characterises online learning. In other words, the evaluation can be designed to be one of the scheduled learning activities embedded in the LMS site, which extends from an extra or trivial task to an interactive and communicative form' (p. 1002).

Conclusion

Course design influences students' perceptions about how classes are conducted and their performance on assessment, as Black et al. (2014) demonstrate in their evaluation of three different types of course design in Marketing. They found that both experiential learning and participative (active) learning designs produced more positive student ratings and better

outcomes than traditional 'passive' designs. Angelo (2013: 110) reiterates the main motif here, that 'a well-designed, learning-centered curriculum is one that helps all willing and able students achieve and demonstrate the expected standard of learning more effectively, efficiently and successfully than they could on their own'. Curriculum making for 'higher' education is a complex process but one that can be generative and creative for students as well as teachers, especially when working as partners in the learning journey.

Questions for reflective practice and professional development

1 How does your curriculum practice embody or reflect your educational philosophy and values?
2 What models of curriculum and learning design are suitable for course design for enabling student learning in your discipline or subject area?
3 What processes and variety of evidence do you employ to review the effectiveness of your course in facilitating student engagement and achievement, both while teaching it and at the end of the cycle?
4 In what ways could you involve students as authentic partners in curriculum development?

Useful websites

'Imaginative Curriculum' Resources Archive
http://78.158.56.101/archive/palatine/resources/imagincurric/index.html

Frameworks and Toolkits – Higher Education Academy
www.heacademy.ac.uk/frameworks-toolkits/frameworks

Programme and Module Design – University College of Dublin
www.ucd.ie/teaching/resources/programmedesigndevelopment/

JISC: Curriculum Change and Transformation
http://jiscdesignstudio.pbworks.com/w/page/57414310/Curriculum%20Change
    %20and%20Transformation

Problem Based Learning Resource Centre – University of Ulster
http://samsara.scic.ulst.ac.uk/~kay/pbl/

UDL On Campus: Universal Design for Learning in Higher Education
http://udloncampus.cast.org/home#.VcDMdflViko

7Cs Framework for Learning Design
online toolkit: www2.le.ac.uk/projects/oer/oers/beyond-distance-research-alliance/
   7Cs-toolkit blog created by Grainne Conole: http://e4innovation.com/

Threshold Concepts
www.ee.ucl.ac.uk/~mflanaga/thresholds.html

Evaluation Cookbook
www.icbl.hw.ac.uk/ltdi/cookbook/contents.html

Classroom Assessment Techniques (CATs) – Vanderbilt University
http://cft.vanderbilt.edu/guides-sub-pages/cats/

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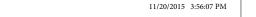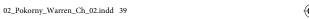
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